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Application No.: 10/622,658

Docket No.: H6790.0002/P002

AMENDMENTS TO THE CLAIMS

1. (currently amended) A phase change optical recording medium, comprising: a substrate; a first protective layer; a recording layer; a second protective layer; a reflective layer wherein the layers are arranged in one of this sequence and the opposite sequence disposed on the substrate; and ~~at least one of a first interface layer disposed between the first protective layer and the recording layer and a second interface layer disposed between the recording layer and the second protective layer, wherein at least one of the first interface layer and the second interface layer comprises a solid solution of an at least partially stabilized~~ oxide of zirconium and at least one oxide of an element, excluding zirconium, selected from the group consisting of elements of period numbers 3 to 6 and group numbers 2 to 14 of the periodic table of the elements.

2. (original) A phase change optical recording medium according to Claim 1, wherein the first protective layer, the recording layer, the second interface layer, the second protective layer, and the reflective layer are arranged in one of this sequence and the opposite sequence disposed on the substrate.

27
3. (currently amended) A phase change optical recording medium according to Claim [[1]] ²⁶27, wherein the first protective layer, the first interface layer, the recording layer, the second interface layer, the second protective layer, and the reflective layer are arranged in one of this sequence and the opposite sequence disposed on the substrate.

3
4. (currently amended) A phase change optical recording medium according to Claim 1, wherein ~~one of the first interface layer and the second interface layer comprises a solid solution which comprises an oxide of zirconium and at least one oxide of an element~~ excluding zirconium is an oxide of an element selected from the group consisting of elements of period numbers 3 to 6 and group numbers 2 and 3 of the periodic table of the elements.

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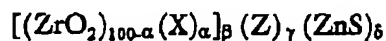
4/5. (currently amended) A phase change optical recording medium according to Claim 1, wherein ~~one of the first interface layer and~~ the second interface layer comprises: a ~~solid solution which comprises~~ an oxide of zirconium and at least one oxide of an element selected from the group consisting of elements of period numbers 3 to 6 and group numbers 2 and 3 of the periodic table of the elements; and at least one oxide of an element, excluding zirconium, selected from the group consisting of elements of period numbers 3 to 6 and group numbers 2 to 14 of the periodic table of the elements.

5/6. (original) A phase change optical recording medium according to Claim 1, wherein the oxide of zirconium is ZrO_2 .

6/7. (original) A phase change optical recording medium according to Claim 1, wherein the oxide of an element, excluding zirconium, is selected from the group consisting of elements of period numbers 3 to 6 and group numbers 2 to 5 and 12 to 14 of the periodic table of the elements.

7/8. (currently amended) A phase change optical recording medium according to Claim 1, wherein ~~one of the first interface layer and~~ the second interface layer comprises a sulfide of zirconium.

8/9. (currently amended) A phase change optical recording medium according to Claim 1, wherein ~~one of the first interface layer and~~ the second interface layer comprises a mixture of a solid solution of an oxide of zirconium represented by the following formula:



wherein "X" represents at least one oxide selected from the group consisting of MgO , CaO , Sc_2O_3 , Y_2O_3 , and CeO_2 ; "Z" represents at least one oxide selected from the group consisting of TiO_2 , SiO_2 , Al_2O_3 , MgO , Ta_2O_5 , and ZnO ; " α " is 2 to 15 mol %; " β " is 40 to 100 mol %; " γ " is 0 to 60 mol %; " δ " is 0 to 60 mol %; and $\beta+\gamma+\delta=100$ mol %.

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~~28~~ 10. (currently amended) A phase change optical recording medium according to Claim ~~[[1]]~~ ²⁶ 27, wherein a thickness of the second interface layer is from 1 to 18 nm.

~~28~~ ²⁹ 11. (original) A phase change optical recording medium according to Claim ~~10~~, wherein the thickness of the second interface layer is from 2 to 14 nm.

~~30~~ 12. (currently amended) A phase change optical recording medium according to Claim ~~[[1]]~~ ²⁶ 27, wherein a thickness of the first interface layer is from 1 to 100 nm.

~~9~~ 13. (original) A phase change optical recording medium according to Claim 1, wherein the second protective layer comprises a material having thermal conductivity of 10 W/(m·K) or less at least in bulk form.

~~10~~ 14. (original) A phase change optical recording medium according to Claim 13, wherein the material having thermal conductivity of 10 W/(m·K) or less at least in bulk form is a mixture of ZnS and an oxide of silicon.

~~11~~ 15. (original) A phase change optical recording medium according to Claim 14, wherein the mixture of ZnS and an oxide of silicon is represented by the following formula:



wherein " ϵ " is 10 to 100 mol %.

~~12~~ 16. (original) A phase change optical recording medium according to Claim 1, wherein a thickness of the second protective layer is 2 to 20 nm.

~~13~~ 17. (original) A phase change optical recording medium according to Claim 1, wherein the recording layer comprises Sb, Te, and Ge wherein a ratio of Sb to Te in number of atoms represented by the formula $\text{Sb}/(\text{Sb}+\text{Te})$ is 0.65 to 0.85.

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¹⁴
~~13~~ 18. (original) A phase change optical recording medium according to Claim ~~17~~, wherein an amount of Ge in the recording layer is 2 to 7 atomic %.

¹⁵
~~13~~ 19. (original) A phase change optical recording medium according to Claim ~~17~~, wherein the recording layer further comprises one of In and Ga.

¹⁶
~~15~~ 20. (original) A phase change optical recording medium according to Claim ~~19~~, wherein an amount of one of In and Ga is 1 to 7 atomic %.

¹⁷
~~21~~ 21. (original) A phase change optical recording medium according to Claim 1, wherein a thickness of the recording layer is 8 to 22 nm.

¹⁸
~~22~~ 22. (original) A phase change optical recording medium according to Claim 1, wherein the reflective layer comprises a metal selected from the group consisting of Au, Ag, Cu, and alloys containing 90 atomic % or more of one of Au, Ag, and Cu.

¹⁹
~~23~~ 23. (original) A phase change optical recording medium according to Claim 1, wherein a thickness of the reflective layer is 90 to 200 nm.

²⁰
~~24~~ 24. (original) A phase change optical recording medium according to Claim 1, wherein the reflective layer comprises one of Ag and an Ag alloy, the optical recording medium further comprising a sulfurization preventive layer between the reflective layer and the second protective layer.

²¹
~~25~~ 25. (original) A phase change optical recording medium according to Claim ~~24~~, wherein the sulfurization preventive layer comprises a substance selected from the group consisting of SiC, silicon, and materials containing 90 mol % or more of one of SiC, and silicon.

²²
~~26~~ 26. (original) A phase change optical recording medium according to Claim 1, wherein a thickness of the first protective layer is 40 to 200 nm.

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²⁶
27. (new) A phase change optical recording medium according to Claim 1, further comprising a first interface layer disposed between the first protective layer and the recording layer, wherein the first interface layer comprises an oxide of zirconium and at least one oxide of an element, excluding zirconium, selected from the group consisting of elements of period numbers 3 to 6 and group numbers 2 to 14 of the periodic table of the elements.

²³
28. (new) A phase change optical recording medium according to Claim 1, wherein the oxide of zirconium has the formula Zr_xO_y , and x and y are integers.

²⁴
29. (new) A phase change optical recording medium according to Claim 1, wherein the oxide of zirconium has the formula Zr_xO_y , and x is less than or equal to y.

²⁵
30. (new) A phase change optical recording medium according to Claim ²⁴29, wherein x is 1 or 2.